

CLAIMS

Sub A1
1. A computing system with a key-ordered list of data objects distributed over a plurality of servers which allows discrete parallel processing on said servers, comprising:

5 (a) a plurality of memories in a plurality of servers, each memory containing a segment of a key-ordered list of data objects where each segment consists of a contiguous subset of said objects having keys with a specified range; and

(b) a query processor which receives queries and, based on data content of the query, directs each received query to one of said plurality of servers by comparing the data content of the query to the specified range of keys for each segment.

10 2. The system of claim 1 where at least one segment includes two or more objects having the same key.

3. The system of claim 1 where the data set on each server is entirely self contained in that it does not include references to data tables that are shared between segments.

15 4. The system of claim 1 where independent processors serve at least two of the segments such that the segments can be accessed simultaneously.

5. The system of claim 1 where each segment is a proper subset of the key-ordered list.

6. The system of claim 1 where, for each object, the key is expressed in complete form such that look-ups can be performed directly based on data content of each query.

20 7. The system of claim 1 additionally comprising an update processor which receives updates and, based on data content of the update, directs each received update to one of said plurality of servers by comparing the data content of the update to the specified range of keys for each segment.

25 8. The system of claim 1 further including means for receiving multiple queries from a single source, directing each query to a different server, combining results of said multiple queries, and directing said results back to the source of the queries.

9. The system of claim 1 where each data object includes a key and one or more data constructs for each of a plurality of said objects.

10. The system of claim 1 where each object is comprised of a type and a value specifically stored as a pair.

11. The system of claim 1 where, for two or more of said objects, each object includes a reference to a location of an associated object on a network.

5 12. The system of claim 1 where there are at least two copies of said memories for a segment of said segmented list.

13. The system of claim 12 where, while one of the copies for a segment is available for updates, the other copies for the segment are available for queries.

14. The system of claim 13 where updates and queries can occur simultaneously.

10 15. The system of claim 13 where at least one copy of each segment is available for query processing at all times.

Sub 16. A method of operating a computing system with a key-ordered list of objects distributed over a plurality of servers which allows discrete parallel processing on said servers, comprising:

15 (a) operating a plurality of servers with a plurality of memories, each memory containing a segment of a key-ordered list of data objects where each segment consists of a contiguous subset of said objects having keys with a specified range; and

(b) operating a query processor which receives queries and, based on data content of the query, directs each received query to one of said plurality of servers by comparing the data content of the query to the specified range of keys for each segment.

20 17. A set of computer data containing a set of computer programs which, when run on a plurality of servers, causes the servers to perform the method of claim 16.

18. The method of claim 16 where at least one segment includes two or more objects having the same key.

25 19. The set of computer data of claim 17 further including the limitations of claim 18.

20. The method of claim 16 where the data set on each server is entirely self contained in that it does not include references to data tables that are shared between segments.

21. The set of computer data of claim 17 further including the limitations of claim 20.

22. The method of claim 16 where independent processors serve at least two of the segments such that the segments can be accessed simultaneously.

23. The set of computer data of claim 17 further including the limitations of claim 22.

24. The method of claim 16 where each segment is a proper subset of the key-ordered
5 list.

25. The set of computer data of claim 17 further including the limitations of claim 24.

26. The method of claim 16 where, for each object, the key is expressed in complete form look-ups are performed directly based on data content of each query.

27. The set of computer data of claim 17 further including the limitations of claim 26.

10 28. The method of claim 16 further comprising of receiving updates and, based on data content of the update, directing each received update to one of said plurality of servers by comparing the data content of the update to the specified range of keys for each segment.

29. The set of computer data of claim 17 further including the limitations of claim 28.

15 30. The method of claim 16 further comprising receiving multiple queries from a single source, directing each query to a different server, combining results of said multiple queries, and directing said results back to the source of the queries.

31. The set of computer data of claim 17 further including the limitations of claim 30.

32. The method of claim 16 where each data object includes a key and one or more data constructs for each of a plurality of said objects.

20 33. The set of computer data of claim 17 further including the limitations of claim 32.

34. The method of claim 16 where each object is comprised of a type and a value specifically stored as a pair.

35. The set of computer data of claim 17 further including the limitations of claim 34.

25 36. The method of claim 16 where for two or more of said objects each object includes a reference to a location of an associated object on a network.

37. The set of computer data of claim 17 further including the limitations of claim 36.

38. The method of claim 16 where there are at least two copies of said memories for a segment of said segmented list.

39. The set of computer data of claim 17 further including the limitations of claim 38.

40. The method of claim 38 where, while one of the copies for a segment is available for updates, the other copies for the segment are available for queries.

41. The set of computer data of claim 39 further including the limitations of claim 40.

42. The method of claim 40 where updating and querying can occur simultaneously.

5 43. The set of computer data of claim 41 further including the limitations of claim 42.

44. The method of claim 40 where at least one copy of each segment is available for query processing at all times.

45. The set of computer data of claim 43 further including the limitations of claim 44.